

Description

The LY02AC05L-Z is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. It complies with IEC 61000-4-2 (ESD), $\pm 25\text{kV}$ air and $\pm 25\text{kV}$ contact discharge. It is assembled into an ultra-small lead-free DFN0603-2 package. The small size and high ESD surge protection make it an ideal choice to protect cell phone, digital cameras and other portable applications.

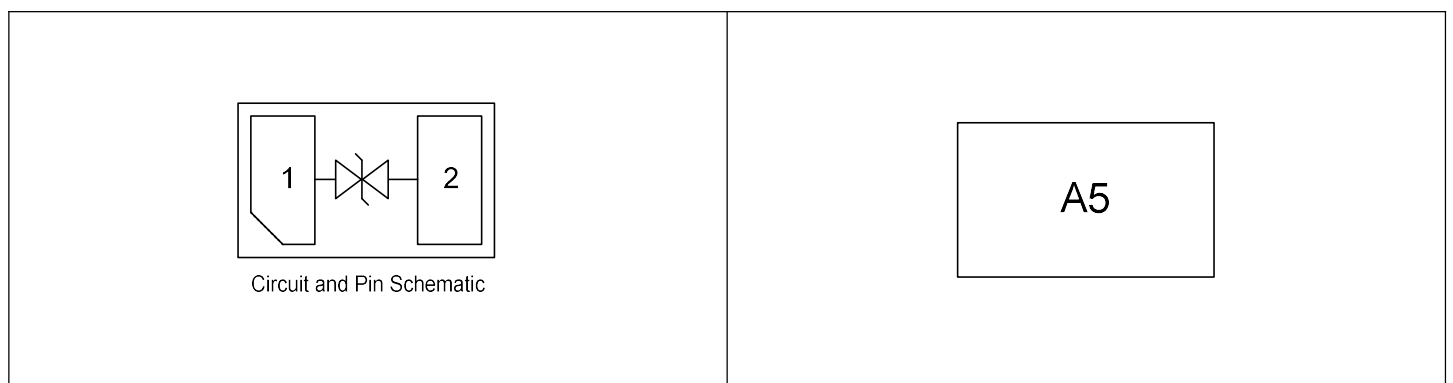
Features

- Low clamping voltage
- Ultra low leakage current
- Operating voltage: 5V
- RoHS compliant
- IEC-61000-4-2 ESD $\pm 25\text{kV}$ Air, $\pm 25\text{kV}$ Contact
- Packaging: 7 inch reel, 15000pcs/reel

Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Audio Players

Pin Configuration and Marking



Absolute Maximum Ratings ($T_A=25^\circ\text{C}$)

Parameter	Symbol	Value
Peak Pulse Power (8/20 μs)	P_{PP}	70W
Peak Pulse Current (8/20 μs)	I_{PP}	7A
ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	V_{ESD}	$\pm 25\text{kV}$ $\pm 25\text{kV}$
Ambient Temperature Range	T_A	-55°C to $+125^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55°C to $+150^\circ\text{C}$

Electrical Characteristics ($T_A=25^\circ\text{C}$)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.
Reverse Working Voltage	V_{RWM}		-	-	5V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	5.6V	-	8.4V
Reverse Leakage Current	I_R	$V_{RWM} = 5\text{V}$	-	-	0.1 μA
Clamping Voltage	V_C	$I_{PP} = 1\text{A}$ (8/20 μs)	-	-	6V
		$I_{PP} = 7\text{A}$ (8/20 μs)	-	-	10V
Junction Capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$	-	15pF	18pF

Typical Characteristic Curves ($T_A=25^{\circ}\text{C}$)

Figure 1. Peak Pulse Power Rating Curve

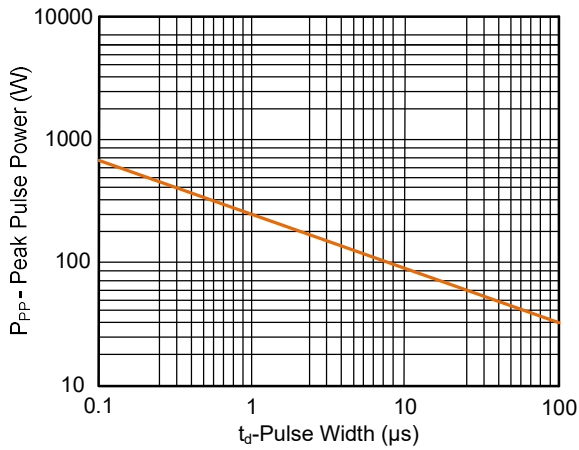


Figure 2. Pulse Derating Curve



Figure 3. Clamping Voltage vs. Peak Pulse Current

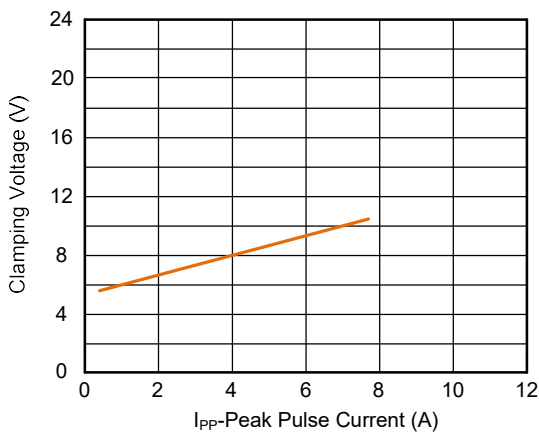


Figure 4. Junction Capacitance vs. Reverse Voltage

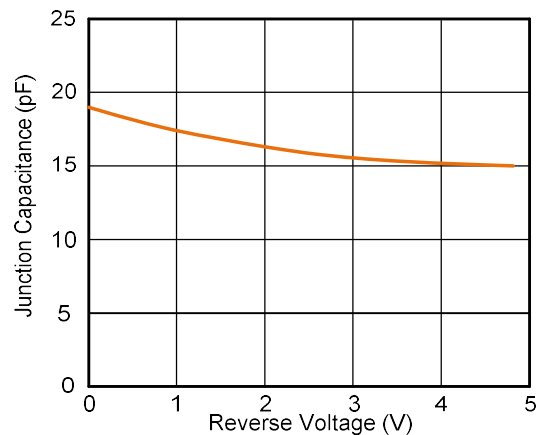


Figure 5. Pulse Waveform (8/20 μs)

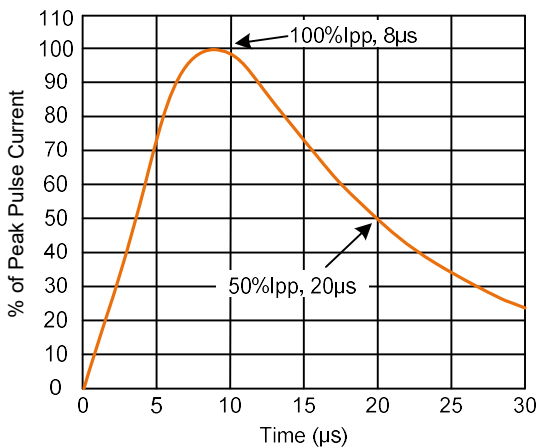
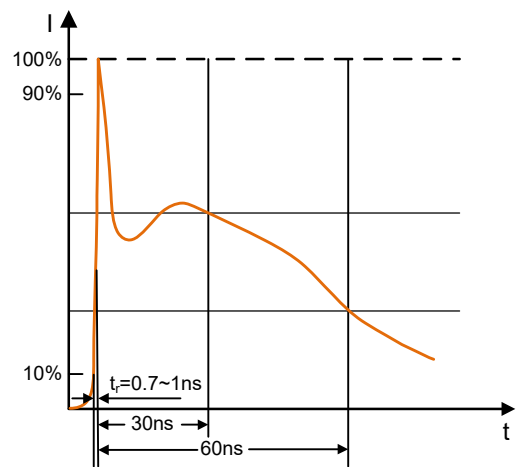


Figure 6. Pulse Waveform (IEC61000-4-2)



Soldering Parameters



Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat <ul style="list-style-type: none"> -Temperature Min ($T_{S\ min}$) -Temperature Max ($T_{S\ max}$) -Time (min to max) (t_s) 	150°C 200°C 60-180 seconds
$T_{S\ max}$ to T_L <ul style="list-style-type: none"> -Ramp-up Rate 	3°C/second max.
Time maintained above: <ul style="list-style-type: none"> -Temperature (T_L) -Time (t_L) 	217°C 60-150 seconds
Peak Temperature (T_P)	260°C
Time within 5°C of actual Peak Temperature (t_p)	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

Dimensions (DFN0603-2)

Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.55	0.65	0.022	0.026
B	0.25	0.35	0.010	0.014
C	0.36BSC		0.014BSC	
D	0.22	0.28	0.009	0.011
E	0.16	0.22	0.006	0.009
H	0.23	0.33	0.009	0.013

The technical drawing illustrates the dimensions of the DFN0603-2 package. It includes a top view with dimensions A (width) and B (height), a bottom view with dimensions C (width) and D (height), and a recommended solder pad layout with dimensions 0.25 (width), 0.30 (height), and 0.4 (pitch). The label 'Bottom View' is placed below the bottom view, and 'Recommended Solder Pad Layout (mm)' is placed below the solder pad layout diagram.